PB-251 170

ENVIRONMENTAL INFORMATION SYSTEMS DIRECTORY. AN INVENTORY OF ENVIRONMENTAL SYSTEMS

Leonard Libster

Environmental Protection Agency
Washington, D. C.

January 1976

DISTRIBUTED BY:

NTIS

National Technical Information Service
U. S. DEPARTMENT OF COMMERCE

092210

PB 251 170

ENVIRONMENTAL INFORMATION SYSTEMS DIRECTORY

An inventory of environmental systems

JANUARY 1976

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

BIBLIOGRAPHIC DATA SHEET	1. Report No. RIN 2800.051	2.	3. Recipient's Accession No.
4. Title and Subtitle Environmental Information Systems Directory			5. Report Date January 1976 6.
7. Author(s) Leonard Libster			8. Performing Organization Rept. No.
9. Performing Organization Name and Address U. S. Environmental Protection Agency Office of Planning & Management Management Information and Data Systems Div. 401 M Street, S. W. Wash. DC 20460			10. Project/Task/Work Unit No. 11. Contract/Grant No.
12. Sponsoring Organization Name and Address Same as above			13. Type of Report & Period Covered 14.

15. Supplementary Notes

16. Abstracts

The Environmental Information Systems Directory provides profile descriptions of major automated systems supporting the administrative and environmental-mission operations of the U. S. Environmental Protection Agency. This Directory was planned to facilitate such important management objectives: systems planning and coordination, reduction in system costs, and elimination of duplicative systems. It includes all systems for which computer costs are generally greater than $20,000 in Fiscal Year 1975.

17. Key Words and Document Analysis. 17a. Descriptors

Environmental Systems
System Directory

17b. Identifiers/Open-Ended Terms

17c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
Release Unlimited	UNCLASSIFIED	86
	20. Security Class (This Page) UNCLASSIFIED	22. Price 5.00

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Listing of System Acronyms

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INTRODUCTION

1. DESCRIPTION OF DIRECTORY

The Environmental Information Systems Directory provides profile descriptions of major automated systems supporting the administrative and environmental-mission operations of the Environmental Protection Agency.

2. PURPOSE OF DIRECTORY

This Directory was planned to facilitate such important management objectives as:

- systems planning and coordination,
- reduction in system costs,
- elimination of duplicative systems.

3. SPONSORSHIP OF DIRECTORY

The Directory is published by the Management Information and Data Systems Division of the Office of the Deputy Assistant Administrator for Administration as part of its assigned functional responsibility of providing leadership in ADP and information systems.

4. CONTENTS OF DIRECTORY

For purposes of the Directory, systems have been defined as sets of automated procedures used to collect, maintain, manipulate and use information or data for a specific objective. The Directory includes both existing systems and systems under development for which computer costs are generally greater than $20,000 in Fiscal Year 1975.

5. ORGANIZATION OF DIRECTORY

System descriptions are alphabetically arranged in the Directory by their system title within the organizational structure of EPA, down to the Deputy Assistant Administrator level. The Directory's Table of Contents list the systems, in accordance with the above described order, and on which page each system is located. As a further aid in finding system descriptions, two additional listings have been included: an Alphabetical Listing of System Titles and a Listing of System Acronyms.

An Environmental Information System Directory number (EISD) has been assigned to each system. Each system is described under six caption headings which are: purpose, annual cost, primary users, description, operation and responsibility.

OFFICE
OF
FEDERAL
ACTIVITIES

Federal Facility Budgetary Data System (FFF) EISD #10013

- **Purpose**:

The FFF provides the data which is used in assessing the budgetary requests for pollution abatement projects being constructed by Federal agencies.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$23,225	$20,000	

- **Primary Users**:

The Regional Administrators and OMB use the reports to analyze and prioritize the requests for proposed facility projects submitted by Federal agencies. The DAA's in the media program areas receive background information from these reports.

- **Description**:

The FFF tracks these pollution-abatement projects through the review system and also provides summary data on these projects. All Federal facilities submit a form for each project to the Office of Federal Activities. There are 65 data elements for each record. The 9,500 records on the master file are updated semi-annually or whenever a special report is required. The major report is prepared annually.

- **Operation**:

Governmental activities submit the source data to the Office for keypunching. A card-to-disk conversion is then made using WYLBUR. Data processing is done in an IBM environment, using primarily COBOL. Several of the programs are written in Easytrieve and IRS. The master file is on tape.

- **Responsibility**:

System Sponsor: Peter Cook
Data Processing Representative: Herman Baucom, Jr.

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ASSISTANT ADMINISTRATOR FOR PLANNING AND MANAGEMENT

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DEPUTY
ASSISTANT
ADMINISTRATOR
FOR
ADMINISTRATION

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Contracts Information System (CIS) EISD #10010

- **Purpose**:

The CIS system tracks the status of procurement requests. CIS also provides summary information on all Agency procurements other than small purchases.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$84,000	$145,000	$88,000

- **Primary Users**:

CIS is used by the Contracts Management Division to determine the status of EPA's contract effort. It is additionally used by the three Contract Management Operations groups to measure and evaluate their workloads. Also, from these reports, the Assistant Administrators, as allowance holders, ascertain the status of their commitments and obligations.

- **Description**:

CIS is a tracking and reporting system used to monitor the scheduled events in the life cycle of a contract. Nine contract milestones are entered into the system for each contract from the initiating commitment through the retirement of the contract. Some of the significant information collected for each contract is:

- Title of contract
- Period of performance
- Estimated cost and obligated amounts
- Type of program effort
- Geographical location

The master file contains 3,200 active contracts, plus an additional 12,000 modifications and other ancillary records. Annually, 2,500 procurement actions are input into the system. Reporting is accomplished mainly through 40 standardized recurring reports, 90% of which are run bi-weekly. The only regular report made external to the Division is the monthly status report to allowance holders.

- **Operation**:

The system operates in an IBM environment, using the WYLBUR text-editing system for input, and the IRS report writer system for special reporting. Input originates at the three Contract Management Operations branches and is handled by EPA's teleprocessing network. The master file is on tape. Updating and preparation of the larger reports are done in COBOL.

- **Responsibility**:

System Sponsor: John C. Comstock

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Library Management System (LIMS) EISD #10017

- **Purpose**:

  LIMS provides the 28 EPA Libraries with a management and retrieval system for their book, journal, and reports collections.

- **Annual Costs**:

Computer	*Personnel*	*Contract Support*
$58,000	$13,000	$50,000

- **Primary Users**:

  Each member library uses the tools produced by the system to retrieve materials from the collections, to affect interlibrary loans, to check in new journals, to maintain property and to record inventory collections. Each uses the circulation system to control charges of materials from the collection.

- **Description**:

  LIMS modules include: journal holdings and check-in, book cataloging, EPA Reports, international exchange, circulation, document control, air pollution effects and accounting. These produce catalogs by title, author and subject; bibliographies in specific subject areas; abstract journals; borrowers' listings; inventory runs; and check-in sheets. All systems except circulation generate output in the format of comput output-microfilm (COM); air pollution effects system is COM bound.

- **Operation**:

  Data are updated from online terminals in 20 library locations. Approximately 20 WYLBUR and IRS programs are used in an IBM environment.

- **Responsibility**:

  System Sponsor: Sarah Thomas Kadec

Personal Property System (PPS) EISD #10012

- **Purpose**:

The PPS provides a perpetual inventory record on all capitalized personal EPA property and leased equipment.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$140,000	$43,000	$10,000

- **Primary Users**:

PPS is used by Property Accountable Officers at Headquarters, Regions, and major laboratories for maintaining control over accountable property.

- **Description**:

PPS is a national system for maintaining property records. The master file contains 55,000 records and has 26 data elements of information on each record. The more important elements for each piece of property are nomenclature, National Stock Number, accountable and custodial areas and acquisition cost. The property carries a book value of $83 million. Six regular reports (4 monthly, 2 quarterly) and three special reports are prepared by the system.

- **Operation**:

The PPS operates in an IBM environment. Inputs are transmitted by teleprocessing from 16 input stations onto a central disk pack. Updating to the tape master file is a Headquarters operation and is done monthly. The Accountable Officers can obtain inventory and special reports in an online mode of operations. The update program is written in COBOL; regular and special reporting is done by IRS language.

- **Responsibility**:

System Sponsor: Frank E. Powers
Data Processing Representative: Carlton Woodell

Personnel/Payroll System (DIPS) EISD #10020

- **Purpose**:

The Departmental Integrated Personnel Services (DIPS) system is a centralized personnel processing and payroll system which services the needs of the entire Agency.

- **Annual Costs**:

Computer	*Personnel*	*Contract Support*
$600,000	$148,000	$29,000

- **Primary Users**:

DIPS is used by the personnel management offices in Headquarters, the Regions, and the laboratories.

- **Description**:

DIPS is a tracking and reporting system. The system itself was developed at the Department of the Interior, and the payroll portion of the system is operated on the USG computer. The Department of the Interior supports not only EPA, but Interior and several other Government agencies as well. EPA, therefore, benefits from the resulting economies of scale provided by the Department of the Interior's specialized expertise in running the system. The system produces payroll checks for all people in the Agency, except commissioned officers. A wide range of personnel management reports also are produced by the system.

- **Operation**:

The operation of the system is divided between OSI and the USG computers. All personnel changes in the Agency are input to the system from Agency offices at Headquarters and in the Regions. Magnetic Card Selectric terminals are used to transmit the data to personnel files at OSI. The use of terminal input from offices outside of Washington has increased the timeliness of the system by eliminating the delays which were experienced when information from the Regions was sent by mail.

The input for the previous bi-weekly period is transferred from OSI to USG for payroll production on a regular basis. After the payroll has been run, the data files at USG are transferred back to OSI. The updated DIPS data files are then available for production of personnel management reports for the Headquarters and Regional offices. These personnel reports are programmed in IRS by the local users. In addition, the staff at USG will produce, upon request, special study reports for users at Headquarters.

- **Responsibility**:

System Sponsor: John R. Martineau

Time Sharing Services Management System (TSSMS) EISD #10252

– **Purpose**:

TSSMS summarizes the time-sharing computer expenditures of all agency offices.

– **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$54,000	$10,000	$21,000

– **Primary Users**:

EPA project and system managers and staff offices at the DAA and AA level use the system to monitor computer costs for their projects and systems.

– **Description**:

All major EPA computer vendors supply accounting data on actual usage. Costs are reported by supplier, EPA organizational level, financial program element and computer project. This information is summarized monthly. Notices of expenditures against ceilings are prepared for all EPA sub-allowance holders.

– **Operation**:

Information to activate a computer project is received by the Management Information and Data Systems Division (MIDSD) on an EDP Services Registration Form. The registration data is input to the master file on disk pack by an on-line text editing technique. Vendor costs data is entered automatically from accounting tapes. IRS is used to generate reports. Cost information is provided to each project user and sub-allowance holders in hard copy format. During the latter part of Fiscal Year 1975, the MIDSD terminated its contract support effort for developing and operating the TSSMS. This work is now done by the staff of the MIDSD.

– **Responsibility**:

System Sponsor: Kenneth Byram

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ADMINISTRATOR
FOR
RESOURCES
MANAGEMENT

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Formal Reporting System EISD #10230

- **Purpose**:

The Formal Reporting System is the basic foundation for Agency-wide status reporting against approved fiscal year program plans. The system is designed to reflect status of select Regional and Headquarters activities necessary to achieve predetermined Agency goals and objectives during the plan year.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$30,000	$13,300	$30,000

- **Primary Users**:

The status reports produced by the system are used by the Administrator, Deputy Administrator, Assistant Administrators, Regional Administrators and operational management to review the status of program activity.

- **Description**:

Reports detailing the status of key planned activities within program areas are broken down by media category. Reporting is quarterly, with the exception of select Construction Grants Program outputs, which are monthly. Reports depict starting levels, planned accomplishments, milestones, current progress and percent of planned activity completed as of reporting date. The reports are utilized by management to monitor select Agency programs and to initiate corrective planning, programming or budgeting action as required.

- **Operation**:

The master file contains over 9,000 records. Inputs to this file are made via WYLBUR by the Regional Offices. Programming is done in IRS, with FORTRAN used for graphics display purposes. An IBM environment is used for these computer functions.

- **Responsibility**:

System Sponsor: Frederick V. Lilly, II

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Grants Information and Control System (GICS) EISD #1011

- **Purpose**:

The GICS system tracks the processing of all grant applications, unsolicited contract proposals, prospective waste-water treatment construction projects, and active grant projects in the Agency. Activities of both Headquarters and state and local assistance grant programs are monitored by the system.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$317,000	$75,000	$15,000

- **Primary Users**:

Grants Administration and Office of Water Programs personnel in regional offices and Grants Administration personnel in Headquarters offices use GICS for operational control. The Headquarters offices of Legislation, Grants Administration, Office of Water Program, Research and Development and others also use the system for summary analysis and reporting of Agency-wide activity.

- **Description**:

GICS is a tracking and reporting system used to monitor the scheduled events in the life cycle of a grant. Information is entered into the system indicating activities such as the following:

- Inclusion of projects on approved State Project Priority List
- Application received
- Application sent to program staff for review
- Grant awarded or denied
- Project work started
- Project completed

The system tracks the flow of administrative paperwork associated with EPA grants to insure timely processing during the pre-award phase and tracks the progress of the project work during the post-award phase. The system alerts management when a projected date has passed without a corresponding system input indicating that the scheduled event has taken place. Standard reports include exception reports of grants which are behind schedule, and full listings of all grants in process.

In addition, the administrative areas within Headquarters, the Regions, and the laboratories can each generate reports to meet their own needs. The Headquarters office of Grants Administration produces monthly and quarterly listings of funded grant projects for publication to the general public. Special statistical reports can be programmed on a request basis to retrieve grant data to meet specific user requirements.

Fifty percent of the operational use of the system by Headquarters is for the purpose of preparing special reports in response to external inquiries from Congress, OMB, other EPA offices and the general public.

– **Operation**:

The system operates in an IBM environment, using the WYLBUR text-editing system for input, and the IRS report writer system for output. Input to the system is performed at the user's convenience through the teleprocessing network. Updates to the system are run on a regularly-scheduled basis every Friday and Tuesday nights at 7:30 PM Eastern Time. Corrections are processed prior to the Tuesday update so that report programs run against the data base on the following Wednesday are current as of the preceding Friday.

– **Responsibility**:

System Sponsor: Paul Wagner
Data Processing Representative: Donald L. Thie

Integrated Financial Management System (FMS) EISD #10015

Purpose:

The Integrated Financial Management System is a centrally operated system serving the financial information needs of all elements of the Agency. The purpose of the system is to allow a manager to monitor commitment activity against authorized obligations.

Annual Cost:

Computer	*Personnel*	*Contract Support*
$550,000	$349,000	

Primary Users:

FMS is used by financial managers at the division level or higher in all Headquarters offices, Regions, and laboratories.

Description:

FMS is a tracking and reporting system which provides an automated capability for monitoring commitments versus obligations in the expenditure of funds throughout EPA. Major obligations of the Agency are tracked by the system. Primary system outputs are status and summary reports. These reports depict appropriations by object class, and obligations by program element and sub-object class.

Operation:

FY '74 was the first year that the system ran in a terminal environment allowing access by all users in the Agency. Prior to that year, input documents were transmitted to Headquarters by mail. Although the system is located centrally on the HEW's Health Services Administration (HSA) computer, fifteen independent files are maintained for the fifteen accounting areas of the Agency. Input is transmitted directly from the Headquarters offices or Regions over teleprocessing lines, the inputs are verified on a periodic basis, and the update program is run weekly to create a new master file for report production. Each of the users has access to a wide range of reports which can be run using any of the fifteen accounting area data files. The system uses the IRS software package for generating reports. It currently operates on the Health Services Administration computer, which is a Government-owned facility. A shift of the FMS system to the OSI computer is currently under review.

Responsibility:

System Sponsor: Alan M. Kapian

Resources Management Information System (RMIS) EISD #10021

- **Purpose**:

The Resources Management Information System (RMIS) supports the Agency's programming, budgeting, and budget execution process by maintaining a file containing EPA's resource plans.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$76,000	$65,000	$10,000

- **Primary Users**:

The Office of Resources Management, headquarters and regional planning officers and the OMB are the primary users.

- **Description**:

The RMIS is based on a master data file and several tables. The master data file contains funding and manpower requirements by fiscal year, program subelement and appropriation authorization. The tables include the program-budget structure, several title tables such as Allowance Holders, Appropriation Authorizations and National Program Managers, and edit tables for program subelements and appropriation authorizations. The tables are used to edit data going into the master data file and to provide structures and titles for the variety of reports produced.

The RMIS produces a variety of reports of funding and manpower resources arranged by program-budget structure, allowance holders, national program managers and appropriation authorizations.

In addition to reports prepared for OMB and a variety of special reports, thirty reports are routinely prepared and distributed monthly. For these reports, as well as special ones, over 100 report programs are available. RMIS also maintains archival files and a Master Transaction History File. The current master file contains around 1,200 records and has up to 75 data elements per record.

- **Operation**:

Input data is received from EPA's Office of Resources Management, which is then converted by WYLBUR to disk file. The tables are updated directly through WYLBUR as changes occur. The master data file changes are input through WYLBUR into a transaction file which is edited against the various tables and the master data file. The master data file is then updated by a computer program and the applied transactions recorded on a master transaction history file. The System operates in an IBM environmental in a batch mode. The programming languages used are IRS and COBOL.

- **Responsibility**:

System Sponsor: Charles T. Wolz

DEPUTY
ASSISTANT
ADMINISTRATOR
FOR
PLANNING
AND
EVALUATION

Form 67 Retrieval System EISD #10245

– **Purpose:**

This system permits easy retrieval of pollution data from the Federal Power Commission automated file on power plant operations.

– **Annual Cost:**

Computer	*Personnel*	*Contract Support*
$16,000	$1,000	–

– **Primary Users:**

This system is used on a demand basis mainly by Office of Planning and Evaluation personnel to obtain required data for assigned project studies.

– **Description:**

This system uses the Federal Power Commission annual file of over 370,000 data items relating to the 825 power plants operating within the USA. The several standard programs in this system query the file for pollutant-related data of interest. A retrieval can cost as little as $10.

– **Operation:**

This system is written in FORTRAN, and is run in an IBM environment. Usually 2-3 requests are made during a month. If necessary, a standard query routine can be modified to suit a special need.

– **Responsibility:**

System Sponsor: Philip Schwartz

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Standards & Regulations Information System (SRIS) EISD #10246

– **Purpose**:

The Standards & Regulations Information System (SRIS) tracks the preparation and review processes for all proposed pollution abatement standards, regulations, and guidelines being developed by EPA under authority of EPA Order 1000.6.

– **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$11,000	$10,000	–

– **Primary Users**:

The reports produced by SRIS are used by the Assistant Administrators, the Deputy Assistant Administrators, and various Agency working group committees for purposes of ascertaining the status of these standards, regulations, and guidelines.

– **Description**:

SRIS is a tracking and a reporting system for approximately 150 active standards, regulations, and guidelines. About five new items are added each month and approximately the same number are removed from the data base. For each of these controlled materials, 15 milestone events are charted. Monthly, a series of summary and detailed status reports are prepared.

– **Operation**:

SRIS is run by remote batch in an IBM environment. The programs are written in COBOL.

– **Responsibility**:

System Manager: Philip Schwartz

ASSISTANT ADMINISTRATOR FOR ENFORCEMENT

DEPUTY
ASSISTANT
ADMINISTRATOR
FOR
GENERAL
ENFORCEMENT

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Compliance Data System (CDS) EISD #10047

– **Purpose**:

State Implementation Plans (SIPS) regulate the amount of airborne pollutants which may be discharged into the atmosphere from stationary point sources. EPA has the responsibility to monitor the State programs in order to insure that the SIP'S are adequately enforced. CDS is used to track the completion of the actions for major sources of five primary air pollutants.

– **Annual Costs**:

Computer	*Personnel*	*Contract Support*
$80,000	$21,000	$175,000

– **Primary Users**:

Regional Offices use the system to monitor State and local activity. Headquarters uses the system to monitor the Regions and prepare special reports.

– **Description**:

Throughout the nation, there are 250,000 stationary sources of significant air pollution, each discharging 25 or more tons of pollutants per year into the air. The air enforcement effort has focused on the 20,000 major sources (each emitting over 100 tons of pollutants per year) that account for 80% to 85% of all pollutant emissions. The States develop implementation plans designed to bring sources of air pollution within specified discharge limits. After the plan is developed, the States then enter the compliance schedule dates comprising these plans into CDS. Schedules include dates for completion of planning, engineering, start of construction, and end of construction. Event completion is reported by the States and is entered into the system by EPA. Weekly reports are provided to the Regions of scheduled events to be monitored. Each month, the States receive listings of events scheduled, overdue actions, and pre-printed questionnaires on current air quality for those sources scheduled to come into compliance.

– **Operation**:

The system is run centrally on OSI. Input data from the Regions may be submitted at any time during the week. On a scheduled basis, the data entered by the States is processed by the edit program and errors are returned to the States for correction. When corrections have been made, the update program is run to update the master tape file. The following morning, reports are generated and sent over the RJE terminals to each Region. These reports include:

- Future schedules
- Overdue actions
- State questionnaires
- List of all sources
- Statistical reports

A Comprehensive Data Handling System (CDHS) was developed by EPA for use by the States in managing their air quality programs. CDHS includes a State Enforcement Management System which

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Compliance Data System (CDS) – Continued

is coordinated with CDS. In addition to supporting State needs, it automatically generates the input data for CDS.

CDS is coordinated also with the National Emissions Data System (NEDS). State questionnaires are produced using both CDS and NEDS data.

– **Responsibility**:

System Sponsor: **Mike Merrick**

Emissions Control Data Base System (ECDBS) EISD #10329

- **Purpose:**

The Emissions Control Data Base System (ECDBS) provides information on emission test performance for selected groups of automobiles. Poor emission control performance in comparison to the standards can be used as a basis for recalling automobiles.

- **Annual Cost:**

Computer	*Personnel*	*Contract Support*
$40,000	$2,500	$20,000

- **Primary Users:**

The Mobile Source Enforcement Division uses the statistics developed by the ECDBS system for evaluating the performance of vehicles in use.

- **Description:**

The Clean Air Act of 1974 provides EPA with a mandate for recalling motor vehicles which exceed emission standards during their initial five years or 50,000 miles of operation. The Administrator of EPA must determine that a substantial number of vehicles are in violation of the established emission standard before initiating any such recall action. The effectiveness of the recall effort depends upon the selection of vehicle classes to test. The ECDBS system supports this selection process by serving as a repository for data collected from various emission test sources. Since these sources have varying formats ECDBS accepts the data input and converts it to a standard format. It is then loaded into a SYSTEM 2000 data base. The data base is then used to generate standard reports and provide comprehensive capabilities for the analysis of the many test procedures and results.

- **Operation:**

The ECDBS has initially been designed to accept input data from four sources: the California Air Resources Board, the California Auto Club, the In-Use Compliance Program of EPA, and the District of Columbia Inspection Maintenance Program. Data from the In-Use Compliance Program is received in machine readable format while the other data sources require key punching.

The ECDBS has six standard reports produced by a system program. The reports provide both detailed and summarized statistics on the data in the system broken down by average vehicle emissions by model year and reporting source, average vehicle emissions by model year, test method and make, and a summary of vehicles tested by test method.

In addition through a feature of the Natural Language of SYSTEM 2000, the user may express ad-hoc queries or browse through the data base with a simple English-like language. This feature may be used in either batch or interactive mode.

The system access capabilities of ECBDS are maintained by a contractor and consist of TSO (IBM's Time Sharing Option) and the remote job entry facilities of WYLBUR. These capabilities enable the user to submit batch jobs for data base loading and preparation of standard reports, and to interactively query the ECDBS. SYSTEM 2000 is used to maintain and provide access to the system's

Emissions Control Data Base System (ECDBS) – Continued

data base both through its Natural language capabilities and through several COBOL language programs written for the system. The ECDBS operates in an IBM 370 computer system environment on the OSI computer system. There are 30,000 records (32 data elements per record) in ECDBS at the present time. When fully developed there will be about 1 million records in the system.

– **Responsibility**:

System Sponsor: Pete Principe
Data Processing Representatives: Jay Wallace

Establishment Registration Support System (ERSS) EISD #10091

- **Purpose**:

  This system identifies pesticide producing establishments and their production volumes as required by Section 7 of the Federal Insecticide, Fungicide, and Rodenticide Act of 1972, as amended.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$24,000	$51,000	$50,000

- **Primary Users**:

  EPA Regional pesticide enforcement personnel are provided information for identifying all companies and establishments their location and pesticide products manufactured in their Region. This background information is also used by the Office of General Counsel and the Office of Pesticide Programs.

- **Description**:

  ERSS receives annual reports from the pesticide industry identifying companies, establishments, and products, with six to eight data elements for each of these three reporting categories. There are approximately 5,200 establishments in the USA. Information is made available to the Regions, as an aid in their making a minimum of one annual inspection per establishment and for enforcement actions.

- **Operation**:

  Reports are produced for the Regions on an as-needed basis. The industry-supplied input data is mailed to the Regional offices and is converted into an automated format by WYLBUR. The master file is on tape. ERSS runs on OSI, using 15 COBOL programs.

- **Responsibility**:

  System Manager: Ron Carlson

Fuels Data Base System EISD #10330

– **Purpose**:

The Fuels Data Base System provides information regarding violations and violation rates of "unleaded gasolines" regulated for their lead contents.

– **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$6,000	$24,000	$22,000

– **Primary Users**:

The Mobile Source Enforcement Division reviews reports to determine patterns of violation and the average lead content of gasoline typically marketed by a company. Company performance can be reviewed on a regional and national basis, thereby, allowing a concentration of efforts on habitual violators. Analyses of the data base enables the Division to examine the technical aspects of the program. For example, gasoline samples analyzed by both field kit and atomic absorption methods can be compared. Also, summaries of EPA enforcement actions can be easily generated and made available to the public.

– **Description**:

In addition to ad hoc reports, quarterly and annual reports will be prepared from the system. These reports will assess the performance of the gasoline industry in complying with the fuels regulations. Types of information included show violation categories by both brand and region, and the numbers of violations and civil complaints against gasoline retailers, distributors, or refiners. Also special reports will be prepared showing such information as percentage of erroneous analyses of gasoline for its lead content, proceeding history of an alleged violator and number of inspections of retail outlets per state (county) by brand.

– **Operation**:

The system accepts data from three sources. These sources are: the Inspection of Retail Gasoline Outlet Form, the Laboratory Test Record of Gasoline Analyses, and the Notification of Enforcement Action and Disposition. The information from each form will be keypunched and then entered into the data base. Most of the continuing contractural cost will be absorbed by this keypunching requirement. Approximately 20,000 inspections a year will be made on the basis of randomly selected retail outlets. Also there will be directed inspections because a complaint has been made about a particular gasoline station. The system is undergoing testing at the present time. The system operates in a UNIVAC 1110 computer system environment. It uses System 2000 as a general purpose data base system.

– **Responsibility**:

System Sponsor: H. Robert Maxey

Pesticides Enforcement Monitoring System (PEMS) EISD #10321

- **Purpose:**

PEMS supports regional pesticide enforcement activities by maintaining a nationwide record of pesticide samples collected, record of violations detected and enforcement actions taken. Such data are used to determine penalties and to formulate sampling strategies.

- **Annual Cost:**

Computer	*Personnel*	*Contract Support*
$101,000	$65,000	$24,000

- **Primary Users:**

The primary users of PEMS are the pesticide enforcement staff in EPA Regional Offices and at Headquarters.

- **Description:**

The system generates a number of management reports on weekly, monthly and quarterly schedules. Regional offices may also at any time generate a special violation history report on any firm. PEMS records a history, by manufacturer, of all enforcement actions taken. Actions may be started because the manufacturer failed to register, or because a sampling indicates that the product is in violation of its registration conditions. Currently in excess of 14,500 samples have been recorded in PEMS.

- **Operation:**

PEMS is a centrally operated system running on OSI. Data is entered by the regions and printed output is routed to each region via remote printer. Weekly reports list actions, while nightly turnaround is available to answer special requests for information.

- **Responsibility:**

System Sponsor: Ken Shiroishi

DEPUTY
ASSISTANT
ADMINISTRATOR
FOR
WATER
ENFORCEMENT

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Permit Compliance System (PCS) EISD #10326

– **Purpose**:

PCS is a tracking system which forecasts when National Pollutant Discharge Elimination System (NPDES) compliance schedule reports and Discharge Monitoring Reports (DMR) are to be submitted by water discharge permittees to the EPA and/or the state enforcement offices.

– **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$77,000	$110,000	$75,000

– **Primary Users**:

The users of the system are compliance clerks and engineers of the Regional and state enforcement offices. Program Managers, and section, branch, and division chiefs also access the printouts and summary reports.

– **Description**:

The Federal Water Pollution Control Act (enacted October 1972) prohibits any person from discharging pollutants into a waterway from a point source unless his discharge is authorized by a permit issued either by the U.S. EPA or by an approved state agency. A separate application is to be submitted for each facility discharging separately. The permit is usually good for 1 to 3 years (some five years). Renewals must be submitted 6 months before a permits' expiration date. The Regions are responsible for determining and maintaining the reporting requirements. The PCS system is a management tool to track these reporting requirements. By providing the users a list of reports that will be due during a specified time period, receipt can be noted and enforcement action can begin against permittees who are delinquent.

The four basic reports available from the system are:

- Forecast of Compliance Schedule Reports due,
- Forecast of Discharge Monitoring Reports due,
- "Quick Look" report with one line of information displayed for each facility on the file, and
- Facility report which lists all the information contained on the data file about the specific facilities selected in the retrieval.

Data are extracted from NPDES permits for entry into the system files. Generally, information is transcribed onto code sheets rather than punched directly from the permit documents.

PCS began operation in Region V in February, 1975. As of July, 1975, Regions III, IV, V, and VII had adopted the system. Additional regions are expected to adopt PCS during FY 76.

– **Operation**:

The system was developed for operation on IBM/370 computer equipment. Programming languages used are BAL, PL/1 and COBOL. All data input, file update, and data retrievals use batch processing.

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Permit Compliance System (PCS) – Continued

Data presently are submitted in card image form through one of four edit programs, each of which is designed to edit a particular type of data. Transactions passing the edits are collected in a 'MOD' file to be held and subsequently processed by the update programs. The weekly update is run on Thursday evenings by the contractor. The data base contains information on 60,000 discharging facilities with 2 to 10 records per facility. Each record has 35 to 40 data elements. These records are organized by EPA Regions. At the present time it is not planned to purge these records to a history file.

Users generate reports at their discretion. DMR and Compliance Schedule Forecast Reports are generated at least once each month, but can cover any period. Quick Look and Facility Reports are produced on request.

Regions are responsible for extracting data from applications and permits, and for coding, keypunching, data submission, review of pre-edit error listings, data corrections, review of update edit listings, and overall maintenance of the data base for their Region. EPA Headquarters has responsibility to develop and maintain all edit, update, and retrieval programs and procedures. Many of these responsibilities are handled by a private contractor.

A Headquarters/Regional user committee recommends systems modifications and enhancements to the Headquarters Office of Enforcement. Actual implementation of changes is the responsibility of Headquarters and is done by Headquarters staff or by the contractor.

– **Responsibility**:

System Sponsor: Robert Hardaker
Data Processing Representative: William Milligan

ASSISTANT ADMINISTRATOR FOR WATER AND HAZARDOUS MATERIALS

DEPUTY
ASSISTANT
ADMINISTRATOR
FOR
PESTICIDE
PROGRAMS

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Pesticides Analysis Retrieval and Control System (PARCS) EISD #10083

- **Purpose**:

The Office of Pesticide Programs (OPP) is responsible for registration of all pesticides used in the nation. PARCS provides a centralized source of information on all of these registered pesticides. Data in the system are used for registration analysis, research, and reporting.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$500,000	$317,000	$75,000

- **Primary Users**:

The system is used chiefly to support the pesticides registration program. Research on chemicals used in pesticides is also a major source for retrieval requests.

- **Description**:

Currently, information on 36,000 pesticides handled in interstate commerce is contained in the PARCS system. Data in this system is highly encoded, for ease and manipulation, and all new data requests are controlled by one central office.

The PARCS system is used to retrieve information about pesticides on a variety of categories. For example, the system can answer questions such as "list all disinfectants and fungicides containing malathion." The system maintains information on the name and address of producer, ingredients (both active and inert), and the usage category of all pesticides. Retrieval software allows the data to be extracted, analyzed, and formatted. Accident investigation information is also maintained as a separate part of the system.

- **Operation**:

PARCS runs on the OSI computer. The data files are stored on-line, but access to them is limited to retrieval requests submitted to OPP. Retrievals are currently being run about 500 times per year, which is up sharply from previous years. The workload to maintain the data has increased 30-40% this year due to new legislation requiring that intra-state as well as inter-state pesticides be registered.

Input for changes to the data is done using WYLBUR data sets. This input accounts for 40% of the annual costs. Retrievals are run in batch mode. Accident information is maintained in a separate file. Data entered by the Regions is edited and stored on disk. Requests for information on accidents average one per week. Standard summary reports are produced monthly.

- **Responsibility**:

System Sponsor: Elgin Fry

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Pesticides Registration System EISD #10028

– **Purpose**:

The Pesticides Registration System provides a wide range of product information about the pesticides registered by the Office of Pesticide Programs (OPP). This system is in the process of being phased into the Pesticides Analysis, Retrieval and Control System. (See page 47).

– **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$380,000	$6,000	$250,000

– **Primary Users**:

The Registration Division (OPP) uses the system to control the registration of pesticides. The Criteria and Evaluation Division of OPP uses the data generated by the system for performing studies on the efficacy of the pesticide program. The Technical Services Division (OPP) prepares a large number of analytical reports for the OPP. The Office of Enforcement uses the pesticide data in connection with their compliance and cancellation activities.

– **Description**:

This system is a large, active and growing one, from which over 50 inventory reports are prepared. At this time, four new reports per month are being developed. One of the most significant reports prepared is a complete English language description of all pesticide products on the master file. Most reports are organized by selective pesticide criteria. A typical report lists and analyses all requested products by product name, with their specified chemical ingredients by percentage of chemical makeup and their formula. Some of the more important data elements found in the system are: product label, product name, name and address of company, project manager of pesticide and site on which the pest is found.

– **Operation**:

The Pesticides Registration System operates in an IBM computer environment and is batch oriented. It is made up of five major subsystems with approximately 1/2 million records on the master file. Monthly updates to the file are now running at the equivalent of 90,000 punched cards. These source records are coded by the Registration Division. The data is converted to an automated format by an off-line key-to-disk system. The master file is kept on tape. Programming is done primarily in COBOL with some FORTRAN, Easytrieve, and CAP (COBOL Architect Program). Every six months a copy of the entire master file is placed on microfiche for in-house use and dissemination to the Regional Offices for manual searching. Monthly updates to this file are also made.

– **Responsibility**:

System Sponsor: James L. Skaptason
Data Processing Representative: Paul Kassy

Epidemiological Studies Program System (ESPS) EISD #10209

- **Purpose**:

The ESPS aids research in the health effects of pesticide products by providing a comprehensive data base on health statistics for persons exposed to various pesticides.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$32,000	$25,000	$100,000

- **Primary Users**:

The twelve Epidemiological Study Project Groups, who are sponsored under this Program, use the data files to make health effects studies.

- **Description**:

This Program has taken over and expanded the Pesticide Community Studies Data System. This Program funds studies of a regional and national scope in such areas as, acute pesticide poisoning, pesticide usage surveys, and chronic effects of pesticide exposure. These study groups use a variety of techniques, such as health examinations, sampling, and hospital records in order to develop and maintain a number of data bases. The average master file has 3,000 to 5,000 records with a large number of individual entries. Many of the records are medical histories updated over a period of time.

- **Operation**:

The Health Effects Branch of the Office of Pesticides Program has begun to exercise control over this data systems operation. Tapes containing the data from these individual projects are being delivered to the Branch for their data manipulation. This data is being used to review the findings of the field studies and to develop new statistical analyses and correlations. New software standards and data management techniques are being developed to better coordinate the work of the 12 individual projects.

- **Responsibility**:

System Sponsor: August Vandermer

DEPUTY
ASSISTANT
ADMINISTRATOR
FOR
WATER
PROGRAM
OPERATIONS

Inventory of Public Water Supplies (INVWAS) EISD #10066

- **Purpose**:

The INVWAS system provides an inventory record of community and non-community public water supplies used throughout the United States.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$149,000	$26,000	$20,000

- **Primary Users**:

The Water Supply Division of EPA Headquarters, Regional Offices, State governments and a number of research facilities use the reports for general management and cost analysis purposes.

- **Description**:

When the system is operational, water supply data will be reported by a variety of categories in the areas of geographical regions, population groups and types of facilities. There are about 40,000 records on community water supplies. Eventually, the inventory will include about 200,000 other public water systems, plus about 5,000 federal recreational supplies. These records are submitted by the office within the state responsible for water supplies to EPA's Regional Offices. Each record has approximately 200 data elements, such as population of community, source of supply, and type of water treatment used.

- **Operation**:

INVWAS runs in an IBM computer environment. Once source records are completed on each water supply facility, new forms will be prepared only when a major change occurs affecting the facility. An eleven volume report will be produced from the data. There will be one volume for each of the ten Regions and one volume of national summary tables. The system will operate in a batch mode. The master record will be on tape. Maintenance programs are written in COBOL; retrieval programs are in PL/1 and IRS language. The data on source records are converted to an automated media by means of the WYLBUR system.

- **Responsibility**:

System Sponsor: George C. Kent

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Spill Prevention Control and Countermeasure System (SPCCS)
EISD #10332

- **Purpose**:

SPCCS is a tracking and reporting system used to monitor and report on compliance deadlines and actions to be taken for the prevention of spills from facilities storing oil and hazardous materials.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$19,000	$4,000	$23,000

- **Primary Users**:

Personnel from the Oil and Special Materials Control Division (OSMCD) and technical specialists in the Regional offices use data in the automated file to initiate spill prevention plan reviews, compliance inspections, and penalty assessments. The system is also used by the U.S. Coast Guard to obtain information on oil spills which have been reported to EPA but which fall under the purview of the Coast Guard for penalty assessment.

- **Description**:

Non-transportation related facilities storing oil are required by laws and federal regulations to prepare spill prevention control and countermeasure plans, and report oil spills to EPA or the U.S. Coast Guard. EPA has also been empowered to amend facility SPCCS plans which are not successful at preventing spills, perform compliance inspections, request information pertinent to spill control, and rule on extensions of plan preparation and implementation deadlines.

To accomplish the above objectives, the SPCCS system is being developed. It is a storage and retrieval type of system. The oil spill data base is created from the input data being encoded by the regions from information about oil storage facilities, spill reports, and enforcement reports, etc.

The specific types of reports which are prepared monthly from the data base are:

- Description of spills which initiate the SPCCS Plan review and amendment process,
- List of facilities whose SPCCS Plan Reviews are pending.
- The status by region and facility of amendments in progress,
- A listing of violations by facility and type of violation,
- A list of facilities required to respond to a Section 308 letter and who have not complied by the due date,
- Ad hoc reports listing by region the number of extensions granted, inspections performed, spills occurring, the causes of spills, the sources of spills and spill descriptions.

Examples of the specific types of technical information coded into the file are: type, amount, cause and date of the spill, the body of water where the spill occurred, type of violation, and type of spill removal method used.

Spill Prevention Control and Countermeasure System (SPCCS) – Continued

– **Operation**:

The SPCCS system uses System 2000 as its generalized data base management system. This system is operational on the OSI computer facility. Approximately 5,000 oil storage facility records are expected to enter the system annually by way of reporting a spill or requesting a plan preparation. Each facility when it first enters the system generates an individual record. Each facility record will have 91 data elements of information. An estimated 24,000 update transactions a year will be required, which is 200 update entries per month per region. Most of the updates will be entered daily via a medium-speed RJE terminal into a regional collection data base. These entries will be edited and transferred weekly into the main SPCCS data base, located at EPA Headquarters. Retrieval of data for ad hoc reporting may be initiated from both central and regional offices interactively or in a batch mode.

– **Responsibility**:

System Sponsor: John M. Cunningham
Data Processing Representative: Jim Chamblee

Survey of Needs for Municipal Waste Water Treatment Facilities EISD #10100

– **Purpose:**

The Survey of Needs system develops costs estimates for the construction of publicly-owned treatment works needed to meet the 1983 goals of the Federal Water Pollution Control Act Amendments of 1972.

– **Annual Costs:**

Computer	*Personnel*	*Computer Support*
$115,000	$50,000	$75,000

– **Primary Users:**

The cost estimates developed from the Survey enable Congress and the Municipal Construction Division to obtain a comprehensive estimate of the total cost of meeting the goals of the water legislation. State-by-State cost estimates are also produced which are used as a basis for allocating construction grant funds. State and local governments and private industry are interested in types of water treatment and various types of effluent data.

– **Description:**

Every two years a needs survey of waste water treatment facilities is required. A 34-page questionnaire is mailed to 17,000 water treatment facilities for obtaining data on all new or existing facilities required to achieve the effluent limitations prescribed by the Federal Water Pollution Control Act of 1972. A report to Congress summarizes the cost estimates of the collected data. There are approximately 35 data elements on each of the 17,000 records, which make up the data base. These records will probably be "archived" when the 1976 Needs Survey data has been obtained. Computer programs are used to check the accuracy of and develop, if necessary, more meaningful costs estimates of proposed treatment facilities.

– **Operation:**

The obtained raw data is keypunched on contract and then converted to tape. The data base and programs use an IBM computer environment. The 50 edit and report programs are written in PL/1 and are on disk packs.

– **Responsibility:**

System Sponsor:
Data Processing Representative: James Chamblee

Technical Assistance Data System (TADS) EISD #10075

- **Purpose**:

  The purpose of TADS is to reduce the effects of oil and hazardous materials spills by providing on-line access to information on material characteristics and emergency response procedures. Field emergency teams can access information directly through terminals or by telephoning someone with a terminal.

- **Annual Costs**:

Computer	*Personnel*	*Contract Support*
$38,000	$15,000	–

- **Primary Users**:

  The Oil and Special Materials Control Division of the Office of Water and Hazardous Materials and Regional Oil and Harardous Materials personnel appear to be the primary users of the system.

- **Description**:

  Currently, the characteristics of 863 materials which represent water pollution hazards are catalogued on an on-line interactive system. (Due to new legislation, plans are to expand to 1,300 materials in the future). The system contains 122 possible fields of technical data on each substance.

  To retrieve information from the files, the user specifies a search list of terms. For example, an unknown substance that is green, floats, and smells like rotten eggs can be identified by searching for those attributes.

- **Operation**:

  In order to satisfy the needs for instant information in the event of spill events, the on-line system is available from the hours of 8 AM until 9 PM, Monday through Friday and Saturday 9 AM through 4 PM. After these hours, the system may be accessed, in case of emergency, within one to three hours after the occurence of a spill event. The system is a full text search system requiring the special capabilities provided by Informatics, Inc.

- **Responsibility**:

  System Sponsor: Jean H. Wright

DEPUTY
ASSISTANT
ADMINISTRATOR
FOR
WATER
PLANNING
AND
STANDARDS

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Word Processing–Effluent Guidelines Division EISD #10327

– **Purpose**:

Word processing is used to reduce the typing load of secretaries in the Agency. Letters, reports, and regulations can be prepared more rapidly with fewer personnel by using such facilities.

– **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$280,000	$61,000	

– **Primary Users**:

The Effluent Guidelines Division of the Office of Water and Hazardous Materials.

– **Description**:

Regulations, reports and letters are entered into the system by typing them on a typewriter connected to the system. Once the text has been entered, it can be modified and changed with a variety of editing commands. Coded commands to the system allow words, sentences and paragraphs to be changed, replaced and moved about by the operator. The significant difference from manual retyping is that with a word processing machine, only those parts of the document which are *changed* have to be retyped or edited by the operator. The machine automatically reformats the entire document as needed. The use of such systems is most valuable for producing documents which undergo repeated, minor changes over time.

– **Operation**:

Bowne Time Sharing (a specialized service bureau) is used for all word processing currently performed for the Agency on large scale computers. It has supported the production of over 1,000 regulations over the past 2-1/2 years.

– **Responsibility**:

System Sponsor: Allen Cywin

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Storage and Retrieval for Water Quality Data (STORET) EISD #10034

- **Purpose**:

STORET makes data handling capability available for water quality data to the States and EPA Regions to meet their statutory planning, regulatory and reporting requirements. It also provides a systematic state, regional, and national data base for reporting trends in water quality to Congress and the public.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$1,189,000	$722,000	$285,000

- **Primary Users**:

There are approximately 400 users of the system, representing 240 different State and Federal pollution control offices nationwide.

Computer usage in FY 75, as measured by computer chargeback to users, was distributed as follows:

44% – States and other Federal Agencies
32% – EPA Regions
24% – EPA Headquarters

- **Description**:

The STORET system is a repository for water quality data. It maintains, at user request, historical records of water quality parametric data by sampling site. There are about 200,000 sampling sites currently identified in the system, with about 30 million data values.

STORET provides the user with a wide variety of tools to retrieve, summarize, analyze and display these data.

The data are used by EPA, its Regions, and the States, to produce legislatively mandated reports to Congress on the quality of water in the nation's major waterways. The data has found general utility among its many users involved in efforts to clean up the nation's water, both as a planning tool and as an indicator of progress.

- **Operation**:

STORET operates on the IBM 370/158 system of OSI. Hardware includes 16 IBM 3330 disk packs, containing 3.1 billion characters of compressed data. Software consists of about 70 programs written in PL/1, FORTRAN,and Assembly Language. Data is stored sequentially, and cross-referenced using IBM, ISAM and BDAM techniques to bypass sequential processing, with special EPA software allowing direct data addressability.

User requests to store or retrieve data are submitted using remote teleprocessing terminals. Information in response to these requests is returned directly to the terminal, or printed at OSI and mailed, at the user's option.

Storage and Retrieval for Water Quality Data (STORET) – Continued

Much effort has been expended in making the computer aspects of STORET processing a "black box" to the user, who feeds in questions at one end, and gets answers from the other. A clerical background is all that is required to submit requests and receive answers. The system can be accessed from anywhere within the continental United States where telephone service is available.

EPA maintains a STORET User Assistance Group, which interfaces with the user community to provide training and problem solving capability. The system processes 69,000 user jobs per year, an average of 55 data input jobs and 212 retrieval jobs per working day.

– **Responsibility**:

System Sponsor: Charles S. Conger
Data Processing Representative: Clarence Tutweiler

ASSISTANT ADMINISTRATOR FOR AIR AND WASTE MANAGEMENT

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DEPUTY
ASSISTANT
ADMINISTRATOR
FOR
SOLID
WASTE
MANAGEMENT
PROGRAMS

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Solid Waste Information Retrieval System (SWIRS) EISD #10095

- **Purpose**:

SWIRS is a bibliographic system which provides access to international literature related to solid waste information. It provides references to the latest developments in the field for disseminating technological information.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$109,000	-	$250,000

- **Primary Users**:

EPA offices, commercial and industrial organizations, and the academic community are the primary users of the system. It is also available to the general public (citizen action, students, etc.), and state and local governments. All requests for information are processed through one central office. The service is provided without charge to all users.

- **Description**:

Abstracts of documents are entered into the system for use in performing literature searches. The SWIRS system uses both key words and free search text techniques to retrieve articles of interest according to the search specifications provided by the user. A thesaurus of control words is used to locate articles matching the search criteria of the inquirer. The control vocabulary meets current interests. Free text search is used more and more as people begin asking for new subjects in the field.

Data for the system is produced by a contractor. They review and abstract all significant articles from approximately 7,000 periodicals. The contractor screens the documents, selects relevant articles, writes the abstracts, and creates the input information for the system.

Use of the system by states, private industry and anti-pollution citizen groups, etc., has doubled over the past couple years. Requests for literature searches are now running at the rate of approximately 1,800 per year. The number of publications contained in the SWIRS system rose from 15,000 abstracts in 1973 to a projected 32,000 abstracts in 1975.

- **Operation**:

Searches to retrieve documents are run in batch mode. A search list is specified and the system retrieves accession numbers of the documents matching the search criteria. The computer prints abstract ID numbers, and the analyst then refers to his own reel of microfilm for reference to the printed abstracts identified by the computer search. The operation of the system emphasizes interaction between the person requesting information and the trained analyst actually submitting the request for a literature search. This combination allows for considerable control over the operation of the system. By dealing with trained analysts who are familiar with the system, the efficiency of the search increases and the number of searches (and computer time) required to find a relevant body of literature to satisfy the interests of the inquirer is significantly reduced. The system is currently operational on the OSI computer and uses WYLBUR for text editing and remote job entry.

- **Responsibility**:

System Sponsor: John A. Connolly

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DEPUTY
ASSISTANT
ADMINISTRATOR
FOR
AIR
QUALITY
PLANNING
AND
STANDARDS

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Air Pollution Technical Information Center (APTIC) EISD #10060

- **Purpose**:

This bibliographic system collects and rapidly disseminates the growing body of air quality technical information. Computer searching of relevant articles assists air pollution agencies and other public or private organizations.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$180,000	$35,000	$400,000

- **Primary Users**:

The system is available through EPA's telecommunications system to all interested EPA users. It is also used to prepare the monthly Air Pollution Abstracts for printing by GPO, which are mailed to over 2,000 recipients.

- **Description**:

Two thousand four hundred retrospective literature searches and 700 SDI searches per year are performed on a file of 70,000 technical documents. Approximately 1,000 articles per month are added to the system from over 7,000 domestic and foreign journals, preprints, patents, Government reports, dissertations, translations, etc.

A fixed size on-line file of citations allows the user to develop a search criteria list in an interactive environment. When the retrieved set of documents is a manageable size, the user may print the citations (5-9 lines per document) on-line. Full text of the abstracts is retained on magnetic tape for printing by the computer. Alternatively, the user may refer to his own microfiche copies of the abstracts.

Most search requests go through APTIC personnel. They help the user develop a search strategy and speed the information retrieval process.

- **Operation**:

Abstracting is done by a Contractor. Input to the system is recorded on computer magnetic tape. The input is edited, corrected and then added to permanent tape storage. Printed and microfilmed copies also are provided by the Contractor. The system runs on the RTP computer. On-line searching of the citations file is available to all EPA users. The system consists of ten COBOL programs and was developed at RTP.

- **Responsibility**:

System Sponsor: Peter Halpin
Data Processing Representative: Ted Bryant

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Air Quality Implementation Planning Program (IPP) EISD #10058

– **Purpose**:

The Air Quality Implementation Planning Program is a model for preparing air pollution implementation plans for sulphur oxides and particulates.

– **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$25,0000	$35,000	–

– **Primary Users**:

State governments use the system for planning and control purposes. For an appropriate emission standard, the resulting air quality is calculated. Finally, a determination is made of the cost associated with the various alternative control strategies.

– **Description**:

IPP is a large model. Data for its use is obtained from the National Emissions Bank. The five major reports produced by IPP, which enable State officials to recommend effective control actions are:

- Source File Listing – used to select appropriate emission standards.
- Diffusion Model Analysis Report – used to estimate spatial distribution to sulfur dioxide and particulate matter concentration throughout an air quality control region.
- Source Contribution Report – used to estimate the contribution from each source to each pollutant receptor defined within the region.
- Control Strategy Report – used to apply a specified control strategy so that the least cost control technology that satisfies the appropriate emission standard is applied to each source.
- Control Cost Report – used to determine estimates of total annual cost and efficiency of pollutant removal for each application of alternative control devices available to each point source.

– **Operation**:

The model is run periodically. It consists of 8 COBOL and FORTRAN application programs. IPP operates in an UNIVAC computer environment.

– **Responsibility**:

System Sponsor: Jerome B. Mersch

EPA Energy Data System (EDS) #10257

- **Purpose**:

EDS provides management with a flexible energy-environmental data base for evaluating problems associated with stationary source fuel usage, fuel quality, compliance with emission regulations, and related effects on air quality.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$16,000	$16,000	$125,000

- **Primary Users**:

The Office of Air Quality Planning and Standards uses the prepared reports for evaluating proposed compliance strategies or changes in emission regulations.

- **Description**:

EDS is currently under development with an anticipated operational date of December 1975 at the earliest. The system will integrate all energy-related data presently in EPA's data banks (e.g., SIPS, NEDS, SAROAD, FPC-67, CDS) into one data file for quick-response, interactive access by the Strategies and Air Standards Division. The requested reports will contain a wide range of energy information and will cover such specific areas as:

- Fuel use summaries by geographical region and by fuel-consuming categories,
- Emission and equipment installed at large fuel-burning sources,
- Regulations applicable to large fuel-burning sources,
- Compliance schedules and status,
- Modeling results for large power plants and,
- Air quality data in the vicinity of large power plants.

- **Operation**:

The EDS will contain data collected primarily by other Federal Agencies and other divisions within EPA. The Federal Power Commission will provide Form 67 and 423 data, the Monitoring and Data Analysis Division will supply air quality monitoring data from the SAROAD system and emissions data from the NEDS system. Data concerning emission regulations and source compliance schedules will be supplied primarily by the Division of Stationary Source Enforcement and the OAQPS. In addition industrial organizations, such as the Edison Electric Institute will contribute occasionally supplementary information. The size of the file is unknown at this time since it is under development. The EDS will, for the most part, be stored on disk. It is anticipated that there will be around 50 application programs. The system will be implemented on MRI Data Management System 2000, using COBOL and FORTRAN interface languages. It will operate in an UNIVAC 1110 computer environment.

- **Responsibility**:

System Sponsor: John Crenshaw

National Emissions Data System (NEDS) EISD #10056

- **Purpose**:

NEDS is a centralized data bank containing engineering data (i.e. annual emissions and operating characteristics) on sources of air pollution throughout the U.S. The NEDS system is used to identify and locate emitting sources for enforcement purposes and to monitor the progress of states in meeting their emission-reduction time schedules.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$283,000	$400,000	$86,000

- **Primary Users**:

EPA headquarters groups use the NEDS system extensively for planning and national strategy evaluation purposes, and for analyzing trends in conjunction with the national aerometric data bank (SAROAD). By having terminal access to the NEDS data bank, the Regional Offices use this data to monitor states' progress and to support their enforcement and surveillance activities. Emission summaries and bulk data are also supplied to other EPA groups and to the scientific community outside the Agency for their use and analysis.

- **Description**:

The NEDS system contains approximately 80 items of technical data for more than 100,000 individual pollution sources throughout the nation. Approximately the same number of area-source data items are kept for each of the 3,200 counties or equivalents in the U.S. Annual emissions for each individual point source are automatically calculated from the source's operating characteristics and pollution control efficiencies. Thus the NEDS system provides both a source and emissions inventory and is organized into two major files (point and area) in which all data are organized for reporting purposes.

It is suggested that the reader refer to the "Description" paragraph of the Storage and Retrieval of Aerometric Data (SAROAD), page 79 for a description of AEROS. This system is a management information system for EPA's air pollution research and control programs.

- **Operation**:

All states are required by Federal Regulation to submit NEDS data semi-annually to the EPA Regional Offices. Data are then transmitted to the National Air Data Branch (NADB) and automatically processed through the edit and validation programs; rejected data are returned to the state agencies for correction. The total number of emitting sources in NEDS has stabilized at 100,000 point sources; the technical data for these sources, however, are continually changing and are incorporated into NEDS on a regular basis.

The NADB provides users with national and interregional reports from NEDS upon written request. Approximately 600 NEDS requests per year are received and answered by NADB.

The system operates on the Univac computer at RTP.

National Emissions Data System (NEDS) EISD #10056 – Continued

– **Responsibility**:

System Monitor: James R. Hammerle
Data Processing Representative: A. A. Slaymaker

Plans Review Management System (PRMS) EISD #10227

- **Purpose**:

The PRMS assists in the analysis of the need for review of State Implementation Plans. Also aids in the determination of possible non-attainment of the National Ambient Air Quality Standards by particular Air Quality Control Regions.

- **Annual Costs**:

Computer	*Personnel*	*Contract Support*
$51,000	$20,000	$50,000

- **Primary Users**:

The system is used by the Control Programs Development Division (DAA for Air Quality Planning and Standards) and the Regional Offices of EPA.

- **Description**:

This system is under development. There will be two principal outputs from this system: (1) The Table of Air Quality values and associated graphical displays for each monitoring site in the Air Quality Control Regions. (2) A Summary by Air Quality Control Regions of each monitoring site within the Region giving the latest available air quality data.

- **Operation**:

The input information used in the system comes from the AEROS system. The system is being developed and written in COBOL, FORTRAN and and ASSEMBLER languages.

- **Responsibility**:

System Sponsor: Johnnie L. Pearson

Storage and Retrieval of Aerometric Data (SAROAD) EISD #10055

- **Purpose**:

SAROAD is a centralized data bank containing aerometric (ambient air) data collected at monitoring sites throughout the nation. SAROAD data are used to identify the levels of air pollution, to analyze the effects of implemented control strategies, and to evaluate trends of pollutant concentrations in the atmosphere.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$589,000	$200,000	$30,000

- **Primary Users**:

EPA Headquarter groups use the SAROAD system extensively for planning and strategy evaluation purposes. All EPA Regional Offices have terminal access to SAROAD and utilize the data reports and summaries to monitor the status of air quality and to support their enforcement and air quality monitoring activities. The system also provides a variety of summary reports and bulk data to other EPA groups and the scientific community outside the Agency.

- **Description**:

The SAROAD system contains over 50 million raw data values, each of which represents a discrete measurement of pollutant concentration in the atmosphere at a given monitoring site over a given period of time. The system contains data for more than 9,000 inactive and active monitoring sites throughout the nation; approximately 4,000 sites are currently operational. In general, SAROAD is composed of three major sets of files: raw data, statistical summaries, and site description. All regional offices have access to most of the available report generation programs that operate upon the summary files. The remaining report programs and terminal edit capability will be decentralized to the Regional Offices as soon as possible.

The NADB provides users with national and interregional reports from SAROAD upon written request. Approximately 800 SAROAD requests per year are presently received and answered by NADB.

A brief description of the Aerometric and Emissions Reporting System (AEROS) is presented here. Since AEROS was only recently developed and publicized, it has not been possible to describe it as a separate system profile for this edition of the Directory. AEROS resulted from the evolutionary development of NEDS and SAROAD. It is a management information system for EPA's air pollution research and control programs. As such, AEROS is mainly concerned with the collection, processing and reporting of basic air pollution data. Therefore the most important aspect of AEROS is as a reporting system. It will provide information for:

a. Evaluation of plans and strategies to meet national ambient air quality standards,
b. Evaluation of emissions and control equipment for the development of new sources performance standards and mobile source emissions standards setting,
c. Support of hazardous pollutants enforcement by EPA, general enforcement actions by EPA, and inspection/monitoring and other recordkeeping.

Storage and Retrieval of Aerometric Data (SAROAD) – Continued

d. Determination of the status, projections and trends of air pollution for reports and progress evaluation,
e. Studies of fuels, their usage and availability and,
f. Research on monitoring of sources and ambient air for modeling in programs such as the Regional Air Pollution Study.

– **Operation**:

By federal regulation, state agencies must submit SAROAD data to EPA every three months. Thus the data bank is continuously growing in size (approximately 10 million values per year) as these agencies continue to operate and expand their air monitoring network. The submitted data are screened manually and by computer to remove erroneous or suspicious values. In addition, the sampling and analysis methods used to generate the data must conform to EPA requirements before the data will be accepted into the data base.

The data are summarized by computing various averages. The data must contain enough samples to make the measurements significant, or they will be rejected. The summary averages are added to the disk data base, while the raw data are held off-line.

– **Responsibility**:

System Monitor: James Hammerle
Data Processing Representative: A. A. Slaymaker

DEPUTY
ASSISTANT
ADMINISTRATOR
FOR
NOISE
CONTROL
PROGRAMS

Noise File EISD #10026

– **Purpose**:

The Noise File provides technical literature abstracts to Government agencies, private firms, and the general public. It is used by EPA in the development of standards and regulations and is available to the states and Regions as well.

– **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$100,000		$350,000

– **Primary Users**:

Current users of the system are primarily the members of the Office of Noise Control Programs at Headquarters. They use the literature in the Noise File to provide basic information used in drafting regulations.

– **Description**:

The system is a bibliographic system of considerable sophistication. The Noise File operates in an on-line environment. It uses free text search of article citations to identify relevant literature for retrieval for the user.

Use of the Noise File allows the inquirer to identify documents which are relevant to a particular subject. For example, a request may be made to identify all articles known to the system which contain the words "airport," "noise," and "Washington, D.C."

– **Operation**:

Informatics, a commercial vendor under contract with the Agency, provides abstracts of 250-300 articles per month from over 7,000 periodicals. For each article selected by Informatics, a citation and abstract are prepared. The citation is entered into the system, which is also run by Informatics.

The user prepares a list of terms relevant to his subject of interest. In an on-line session, all citations are searched by the machine to locate articles matching the search list criteria. The on-line session allows the user to narrow the list of articles retrieved to a manageable number. The abstracts themselves are then printed off-line and mailed to the user.

– **Responsibility**:

System Sponsor: Henry E. Thomas

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ASSISTANT ADMINISTRATOR FOR RESEARCH AND DEVELOPMENT

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DEPUTY
ASSISTANT
ADMINISTRATOR
FOR
MONITORING
AND
TECHNICAL
SUPPORT

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Lab Automation Project EISD #10331

Purpose:

The purpose of the Lab Automation Project is to improve the productivity and accuracy of laboratory operations.

Annual Cost:

Computer	*Personnel*	*Contract Support*
$150,000	$145,000	$350,000

Primary Users:

Laboratories in ORD and in the Regions are the potential users of these systems.

Description:

The prototype systems are being developed at the Cincinnati Environmental Research Center and at the Region V laboratories through an interagency agreement with the Lawrence Livermore Laboratory. (The annual costs cited above include research costs as well as the cost of the computer and its hardware.) Data from the test instruments are analyzed by minicomputers and converted into a format suitable for input into other Agency systems, such as STORET. In addition, the computers monitor error drifts in the test equipment and make numeric or other adjustments to insure more accurate test results. The minicomputers, which are used for surveillance and analysis purposes, also maintain an audit trail of samples to insure that data that was accumulated for eventual courtroom use satisfy judicial "chain of evidence" requirements.

Operation:

The Lab Automation Project uses Data General Nova computers installed at each laboratory. Software and technical assistance for the project are being provided by the Lawrence Livermore Laboratory, who have successfully developed similar systems in the past.

Responsibility:

System Manager: William Budde
Data Processing Representative: Edward Nime

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Laboratory Data Management System (LDMS) EISD #10247

- **Purpose**:

The purpose of the Laboratory Data Management System (LDMS) is to utilize large-scale, time-shared computers to assist Regional and enforcement laboratories in storing, editing, manipulating, and analyzing data generated from chemical and physical analyses performed by EPA laboratories.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$22,000	$35,000	0

- **Primary Users**:

The primary users are monitoring laboratories operated by the Regions and by other parts of the Agency, where large numbers of samples are analyzed routinely. The prototype LDMS system was developed in-house and under contract by the EPA Region V (Chicago) laboratories. It is the result of a cooperative ORD-Regional project supported, in part, by the Agency's quality assurance program. The system is suitable for adoption by other EPA Regional and enforcement laboratories having access to the OSI computer.

- **Description**:

The Laboratory Data Management System is designed to apply existing EPA time-shared computers to the problem of managing and storing laboratory data. At present, many EPA Regional and enforcement laboratories compile large volumes of data, by pencil and paper, on a variety of forms. Numerical data on pollutant concentrations and other parameter values are copied on cumbersome data sheets and are often keypunched into STORET (or other data banks) by persons outside the laboratory who are not familiar with the data. Using LDMS, the data are entered directly into the computer by means of remote typewriter terminals and are maintained under the jurisdiction of laboratory personnel. The data can be routed to other users; reports can be generated; statistics can be carried out; and, when finally satisfied, the data can be routed to STORET or other data archives. One of the internal programs in the system carries out quality control checks on the data, flagging values that lie outside designated range limits, and another program checks formats and parameter codes for accuracy.

- **Operation**:

The Laboratory Data Management System is operational on the OSI IBM 370/158 system. The LDMS programs are stored on WYLBUR disk files, and the system utilizes WYLBUR commands and LOAD/GO procedures to carry out data manipulation and processing. The data are inputted using one of the programs, LABEL. Such generates a columnar format, which is then stored on a WYLBUR disk file and is compatible with Region V's monitoring survey forms. The user enters his data into the columns of this format and stores the data on disk storage. Additional programs then are activated to carry out quality control screening of the data, reformatting of data, special summary reports, and, if desired, summary statistics. One of the programs included in the system is derived from the Storet Input Data Editing System (SIDES) originally developed by Region IV. SIDES checks all data entries to see that formats are correct and that parameter codes are accurate. Interface programs are provided in LDMS to ultimately transfer the data to STORET.

Laboratory Data Management System (LDMS) – Continued

The system was designed potentially to give laboratory personnel a "front end" to STORET and other archival systems wherever time-shared terminal use is desired. It is also designed to improve the accuracy of laboratory data by reducing keypunch errors and format errors.

– **Responsibility**:

System Sponsor: Billy Fairless
Data Processing Representative: Wayne Ott

National Eutrophication Study (NES) EISD #10303

- **Purpose**:

The objective of the National Eutrophication Study is to study the aging and enrichment process in 800 selected lakes in 48 states.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$65,000	$40,000	

- **Primary Users**:

The Water Quality people in the Regions and the Water Quality Planning and Standards Office use NES for basic planning and water quality assessment. This system is used by the Permit Program for permit review and for making revisions to their program. State and local governments utilize NES for developing priorities for construction of treatment plants.

- **Description**:

NES or the Lake Survey is a five year study (1-1/2 years to go) to determine whether phosphorous removal from municipal sewage treatment plant effluents benefit the trophic state of the receiving water bodies. On-site surveys of these lakes are made three times per year. (STORET, on the other hand, monitors streams and rivers in the continuous collection of data without a cut-off date, such as NES' five year period.) The results of these surveys are the collection of water quality and flow data in the form of 4 million data values.

The master file is queried for the production of data and statistics used in the preparation of reports analyzing the water quality of individual lakes and groups of lakes.

- **Operation**:

Data is collected in the field through in-situ sampling and through the laboratory analysis of grab samples. The data is entered using standard STORET input formats. STORET updates and retrievals are run weekly or as required. The NES file operates in an on-line environment in the OSI time sharing system. Also the system uses a CDC computer at the Oregon State University.

- **Responsibility**:

System Sponsor: Robert Payne

State of the System Model (SOS) EISD #10213

- **Purpose**:

The SOS is a model which analyzes different alternative approaches for matching the growth desires of a populated area with the limitations of the environmental and man-made resources.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$25,000	—	—

- **Primary Users**:

The SOS model is used by researchers in the Office of Research and Development, special study groups within EPA, and non-Governmental organizations such as universities. It is especially useful as a teaching tool.

- **Description**:

SOS is a small-scale model. Its major parameters are: population, production levels, resource stockpiles and satisfaction of population goals and services. The aggregate initial year data base values are set at the 1970 level.

- **Operation**:

SOS is written in FORTRAN and is operated in an IBM environment. When non-EPA organizations request use of the model, a card deck of the program is sent to the requestor.

- **Responsibility**:

System Sponsor: Calvin O. Lawrence

Strategic Environmental Assessment System (SEAS) ESID #10239

– **Purpose**:

SEAS is a large computer model designed to forecast the impact of environmental quality level requirements on economic, sociological, energy demand, and ecological conditions. The effect of economic and demographic variations on pollutant residual levels also is projected by the model. It is used to study possible consequences of alternative environmental policies, energy factors, and socio-economic trends over a 10-15 year time span.

– **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$749,000	$200,000	$480,000

– **Primary Users**:

The Office of Research and Development, the Office of Planning and Evaluation of OPM, Office of Solid Waste Management, Office of Water Planning and Standards, and special study task forces use the system. Non-EPA users include the Council on Environmental Quality, National Commission for Water Quality, U.S. Water Resources Council, U.S. Congress Office of Technology Assessment, Energy Research and Development Agency, National Institute of Health (RFF), Department of Interior, Department of Labor, Department of Commerce, Department of Transportation, USA Corps of Engineers, US regional commissions, and some state agencies.

– **Description**:

SEAS is the largest modeling effort in ORD. It models all major elements of the economy, energy factors and the environment and simulates the complex interactions between environmental and economic policies. Elements of the model include such economic factors as durable goods demand, total personal income, the industrial capital structure, inventory levels, domestic and foreign demand and Governmental expenditures. Environmental factors in the model include energy consumption, abatement costs, pollution residual levels, auto usage and area pollution sources. The model has thousands of individual factors. The model is used to generate forecasts on the following subjects:

- National Economy
- Additional environmental industry detail
- Energy budgets
- Primary and secondary pollutant residuals
- Environmental pollution control costs
- Usage of critical ores and fuels
- Required capital investment levels
- Transportation demands and associated residuals
- Solid waste levels
- Water heating use and residuals
- Land usage and residuals

Strategic Environmental Assessment System (SEAS) – Continued

– **Operation**:

SEAS is written primarily in FORTRAN with two programs in COBOL and is operated on OSI as approximately 20 independent programs. Data collected from many different sources are used to create relationships within the model and to drive the operation of the model. The model runs as a series of batch programs. Data are input using the WYLBUR on-line text editor. Output is available in either printed, graphic, or machine readable form for use by additonal analysis programs.

– **Responsibility**:

System Manager: Calvin O. Lawrence

DEPUTY ASSISTANT ADMINISTRATOR FOR HEALTH AND ECOLOGICAL EFFECTS

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Great Lakes Water Quality Models (GLWQM) EISD #10283

- **Purpose**:

The GLWQM are a related series of computer models designed to describe a number of water quality degradation processes in the Great Lakes and to predict the effect of waste-load reductions.

- **Annual Cost**:

Computer	*Personnel*	*Contract Support*
$70,000	$120,000	$330,000

- **Primary Users**:

A number of the states and municipalities bordering the Great Lakes use the models for investigating and developing strategies for improving the Lakes. Region V water personnel, NOAA and the Corps of Engineers also utilize these models. Several universities are interested in the methodologies utilized in the models.

- **Description**:

The GLWQM comprise a dozen different models in various stages of development. These computer programs are specifically geared to the problems of Lake Ontario, Huron, Erie and Saginaw Bay and describe their physical, chemical and biological processes. Their aim is to predict the effects of wasteload reductions. Model inputs include such factors as waste loads, bathymetry and meteorological conditions. Outputs from the models generate predictions on circulation and levels of water quality indicators, such as phytoplankton, bromars chloride, and dissolved oxygen. Quarterly reports are prepared summarizing these outputs. On a more formal basis the Grosse Ile Laboratory and their grantees, who have developed models, publish technical articles on their findings and analyses.

- **Operation**:

The GLWQM are written in FORTRAN and are operated on the OSI computer system. Eventually 1 million data points will be collected from grantees or be obtained from the STORET Data Base for use in creating relationships within the model. These data points will be stored in the STORET File. The models will operate both online and in batch on the OSI system.

- **Responsibility**:

System Sponsor: Tudor T. Davies
Data Processing Representative: William L. Richardson

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- **Responsibility**:

System Sponsor: Tudor T. Davies
Data Processing Representative: William L. Richardson

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Population Studies Sytem EISD #10186

Purpose:

The Population Studies System produces statistical-type data for evaluating the effects of specific air pollutants on human health.

Annual Cost:

Computer	*Personnel*	*Contract Support*
$282,000	$212,000	$337,000

Primary Users:

The statisticians and epidemiologists of the Health Effects Research Laboratory, RTP use the collected health data in order to develop and publish statistics in the scientific literature on the health effects of air pollution. These statistics aid in formulating the standards which are published in air quality criteria documents.

Description:

This system replaces the Community Health Environmental Surveillance Study (CHESS) which developed a similar approach to health problems by studying people over a five-year period. Over 300,000 records in 60 Master Files are used in these Population Studies. The number of data elements in a record vary from a small to a large range with 75 being an average. Examples of data collected on people are: age, sex, length of residence, occupational history, smoking history, education and various types of disease information. These data elements are summarized into file subjects given to statisticians, who correlate the effects of elevated air pollution on the health of individuals.

Operation:

Local and state health agencies under contract to the Health Effects Research Laboratory use mark-sense forms, if possible, to collect the required data on people being studied. The 300,000 forms are annually inputted into the automated files by either optical scanning or key-taping. Approximately 40 subsets are produced a year by using the computer programs of the master files. No plans have been developed at this time for archiving this data. The Population Studies System, which is a loosely connected system, has 240 COBOL and FORTRAN programs. It also uses a wide variety of statistical packages. The system runs in a UNIVAC 1110 environment.

Responsibility:

System Sponsor: Gene Lowrimore

DEPUTY
ASSISTANT
ADMINISTRATOR
FOR
AIR,
LAND
AND
WATER
USE

Predictive Models for Fresh Water Ecosystems — EISD #10291

Purpose

The Predictive Models for Fresh Water Ecosystem will predict the degradation and movement of specific pollutants in aquatic ecosystems.

Annual Cost

Computer	*Personnel*	*Contract Support*
$25,000	$50,000	

Primary Users

EPA scientists use these models to better understand and predict the damage done to water by pollutants.

Description

Three models are in various stages of development for predicting the consequences of pollutants in bodies of water. The first model predicts the condition of streams after the introduction of pesticides (pesticide degradation). A second study models mercury transformation and transport in streams. The third one models algae growth in freshwater lakes. These models differ from other EPA models like the National Eutrophication Model in that the input values are obtained from laboratory or literature studies as against field studies. Also they are oriented towards the degrading effects of toxic substances in comparison to the introduction of substances which stimulate undesirable growth. These three models are modest in size and have been designed to be modules for use with other EPA water quality models.

Operation

The data values used with these models are obtained from scientific literature and the Southeastern Research Laboratory's Aquatic Ecosystem Simulator, which is used to generate artificially developed test data. The master file may contain 1,000 values which involve such water quality parameters as, amount of acidity, temperature, amount of pesticide, and organic carbon. These models operate in an IBM computer environment.

Responsibility

System Sponsor: Ray Lassiter

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Regional Air Pollution Study (RAPS) (EISD # 10044)

Purpose:

The RAPS program is a research program to validate, develop and improve air pollutant simulation models through data collected by an extensive ground-based network supported by air measurements in the St. Louis Air Quality Control Region (AQCR). It is the most ambitious study of its type ever attempted. Its models will be used in evaluating alternate control strategies for an urban region. Also the Study will determine the extent to which the present methods for modeling meteorology, atmospheric chemistry, and pollutant emissions can be generalized for application to different geographical and climatological conditions.

Annual Cost:

Computer	Personnel	Contract Support
$114,000	$20,000	$300,000

Primary Users:

Various groups in EPA and NOAA as well as universities and contractors participate in data collection and use the data generated by RAPS in validation of air quality models. The ultimate users of the system are those people responsible for air quality implementation planning and land use planning in the state and local agencies.

Description:

The RAPS program was initiated in FY 1973 as a five-year research program. Its overall objective is the development of mathematical simulation models of air pollution processes. The models will be quantitative formulations of all the atmospheric processes of pollutants: dispersion of pollutants through diffusion, advection and other processes, transformation of pollutants by chemical reactions, and removal of pollutants. With this tool the results of pollutant control actions and strategies can be predicted.

The Environmental Science Research Laboratory within the Office of Research and Development has overall responsibility for RAPS and specific responsibility for collecting RAPS ambient air quality data and operating the entire data storage retrieval system. The National Air Data Branch of the OAQPS for Air Quality Planning and Standards at RTP, North Carolina was assigned the specific responsibility of developing and collecting emissions data.

All emission source inventory methodologies for RAPS have now been completed. The application of these techniques for data collection is now underway and will continue throughout FY 1977. RAPS requires an extensive data base of ambient, meteorological and emission information over several consecutive years.

Ambient data consists of measurements on total sulfur dioxide, hydrogen sulfide, carbon monoxide, methane, total hydrocarbons, nitric oxide, oxides of nitrogen, ozone, visibility, total suspended particulates, particulate sulfates and nitrates, and particulate size differentiation and elemental analysis thereof by X-ray fluorescent. Meteorological information consists of measurements of wind speed, wind direction, turbulence, temperature, dew point, vertical temperature gradients, barometric pressure and solar radiation.

To fulfill these requirements, detailed methodologies were developed to calculate emissions for the following subject areas:

- hourly inventory of major point sources
- fugitive dust
- line sources
- automotive
- airports
- stationary area sources (residential and commercial/institutional)
- vessels
- railroads, and
- off-highway mobile sources.

Ambient and meteorological data are routinely measured at 25 ground stations and upper atmosphere sounding stations. Data from the ground stations are taken continuously around the clock, year around, resulting in over one million observations per day. Wind and temperature aloft are measured at the two sounding sites. Additional periods of intensive field measurements employing helicopters and fixed-wind aircraft and additional mobile equipment are also made.

Operation

A computerized system for emission data containing 2,000 grids has been established for the St. Louis AQCR and provisions made for automatically assigning hourly area source data to each grid (approximately 50 items of data). This information will either be measured directly or estimated using generalized equations (e.g. estimated cycles of diurnal and seasonal variations of residential heating). Approximately 1,000 individual point sources will be tracked on a weekly or monthly basis and generalized equations used to estimate their hourly emission. It is planned that hourly emissions will be directly and continuously measured for about 50-100 of the larger sources.

Twenty-five minicomputers serve as the data acquisition system in the ground stations. Data from all the minicomputers are telecommunicated each minute to a larger scale mini-computer serving as a central collection point. The central mini-computer edits, validates and converts the data to a magnetic tape file. The tapes are mailed to RTP for incorporation into the RAPS Data Base.

Responsibility

System Sponsor: Francis Pooler